

CLAIMS

1. A method to confer formaldehyde resistance to an autotrophy comprising the steps of; introducing gene(s) encoding enzyme(s) involved in the metabolic system of formaldehyde into the autotrophy having the Calvin cycle and having the enzyme(s) involved in the metabolic system expressed in the autotrophy, thereby formaldehyde resistance is conferred to the autotrophy.

2. An autotrophy having formaldehyde resistance, in which gene(s) encoding enzyme(s) involved in the metabolic system of formaldehyde is(are) introduced into the autotrophy having Calvin cycle to have the enzyme(s) involved in the metabolic system expressed in the autotrophy, thereby formaldehyde resistance is conferred to the autotrophy.

3. A method to have an autotrophy to absorb formaldehyde comprising the steps of; introducing gene(s) involved in the metabolic system of formaldehyde into the autotrophy having the Calvin cycle and having the enzyme(s) involved in the metabolic system expressed in the autotrophy, thereby the autotrophy is made to absorb formaldehyde.

4. A transgenic autotrophy having the ability to absorb formaldehyde, in which gene(s) encoding enzyme(s) involved in the metabolic system of formaldehyde is(are) introduced into the autotrophy having the Calvin cycle to have the enzyme(s) involved in the metabolic system expressed in the autotrophy, thereby resistance to formaldehyde is conferred to the autotrophy.

5. A method to confer formaldehyde resistance to a plant comprising the steps of; introducing genes encoding hexulose-6-phosphate synthase and 6-phosphohexulose isomerase into the plant and having the genes expressed in the chloroplast of the plant, thereby the ability to assimilate formaldehyde into an intermediate of the Calvin cycle is conferred to the plant.

6. The method according to Claim 5 comprising the steps of; generating 3-hexulose-6-phosphate from ribulose-5-phosphate and formaldehyde by the action of said hexulose-6-phosphate synthase, and further converting the 3-hexulose-6-phosphate into fructose-6-phosphate by

the action of said 6-phosphohexulose isomerase.

7. A transgenic plant having resistance against formaldehyde, in which genes encoding hexulose-6-phosphate synthase and 6-phosphohexulose isomerase are introduced into the plant to have the genes expressed in the chloroplast of the plant, thereby the ability to assimilate formaldehyde into an intermediate of Calvin cycle is rendered to the plant.

8. The transgenic plant according to Claim 7, wherein said plant is a dicotyledonous plant.

9. The transgenic plant according to Claim 8, wherein said plant is a plant of Solanaceae.

10. The transgenic plant according to Claim 9, wherein said plant is tobacco.

11. The transgenic plant according to Claim 8, wherein said plant is a plant of *Cruciferae*.

12. The transgenic plant according to Claim 12, wherein said plant is *Arabidopsis thaliana*.

13. A method to have a plant to absorb environmental formaldehyde comprising the steps of; introducing genes encoding hexulose-6-phosphate synthase and 6-phosphohexulose isomerase into the plant and having the genes expressed in the chloroplast of the plant, thereby the ability to assimilate formaldehyde into an intermediate of the Calvin cycle is conferred to the plant.

14. The method according to Claim 13 comprising the steps of; generating 3-hexulose-6-phosphate from ribulose-5-phosphate and formaldehyde by the action of said hexulose-6-phosphate synthase, and further converting the 3-hexulose-6-phosphate into fructose-6-phosphate by the action of said 6-phosphohexulose isomerase.

15. A transgenic plant having the ability to absorb formaldehyde, in which genes encoding hexulose-6-phosphate synthase and 6-phosphohexulose isomerase are introduced into the plant to have the genes expressed in the chloroplast of the plant, thereby the ability to assimilate formaldehyde into an intermediate of the Calvin cycle is conferred to the plant.

16. The transgenic plant according to Claim 15, wherein said plant is a dicotyledonous plant.

17. The transgenic plant according to Claim 16, wherein said plant is a plant of *Solanaceae*.

5 18. The transgenic plant according to Claim 17, wherein said plant is tobacco.

19. The transgenic plant according to Claim 16, wherein said plant is a plant of *Cruciferae*.

10 20. The transgenic plant according to Claim 19, wherein said plant is *Arabidopsis thaliana*.